Aquaculture Strategy
Creating Sustainable Wealth in Rural and Coastal Nova Scotia
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Minister’s Message

The Aquaculture Strategy, “Creating Sustainable Wealth in Rural and Coastal Nova Scotia” demonstrates our commitment to ensuring aquaculture development is done in a sustainable way.

Our province works closely with the federal government and with other Atlantic Provinces through a memorandum of understanding to help streamline regulations as well as developing regulatory programs for fish health.

Nova Scotia’s aquaculture industry is one of the most diverse in the world. We cultivate many different species of finfish and shellfish, as well as Irish moss and other sea plants. It is this diversity that will help provide a solid foundation for developing a truly sustainable aquaculture industry.

These are exciting times in Nova Scotia for aquaculture, with companies looking to expand in the province. Nova Scotia’s aquaculture industry is a significant contributor to the economies of our rural and coastal communities.

As our industry grows, we need to have a clear direction. The government’s plan to create good jobs and grow a strong, more sustainable economy is known as jobsHere. Aquaculture has been identified as a key priority area in jobsHere. Through our strategy we will help build public confidence in aquaculture, improve innovation, productivity, and competitiveness while maintaining a high level of environmental protection.
Many people believe earning public trust is a key priority. We have identified public engagement as one of the strategic pillars in our strategy—this is an important step.

Government believes in the competitive advantages of aquaculture and supports the continued development of an environmentally responsible industry that protects all coastal resources including our traditional fishery. Regulation and monitoring ensure aquaculture farming adheres to environmental standards. We must always ensure our policies fit the size and complexity of the industry. As aquaculture in Nova Scotia continues to expand, so must the regulatory system.

By working together—industry, government and Nova Scotians—can create more wealth in rural and coastal communities. Nova Scotia is positioned to benefit from this growing industry.

The government has developed this strategy to ensure that aquaculture continues to expand and grow in a well managed way that will protect the environment and bring benefits to communities throughout the province.

There is a bright future for aquaculture in Nova Scotia and this strategy will guide us forward.

Sterling Belliveau

Minister of Fisheries and Aquaculture Sterling Belliveau
Aquaculture is not new to Nova Scotia; it has been a part of our coastal industries for more than thirty years. The sector contributes $50 million annually to the economy, and supports approximately 750 direct jobs as well as over 1,000 indirect jobs. However, it has not reached its full potential. There is opportunity for substantial growth through a thoughtful and planned approach encompassing social, environmental, and economic values.

Here, the Government’s strategy and plan to grow a strong and more sustainable economy, identifies the development of aquaculture as a priority. To accomplish this goal, we need to better understand the coastal and inland water environments. Responsible farming, regulatory safeguards, and public engagement are critical lynchpins to build confidence in the aquaculture industry.

Although aquaculture has achieved only a fraction of the true potential, it would take little growth to have a dramatic impact on the provincial economy. Even a modest increase in aquaculture leases could move the industry from a value of $40–50 million, with limited local fish processing, to one triple that value, with one or more new processing operations, investments of millions, and hundreds of direct jobs along the value chain.

Aquaculture companies and their suppliers want to expand the industry in our province. To maximize the potential benefits and minimize the risks, the government has developed this strategy to ensure that the industry is managed responsibly and effectively, leading to economic growth and wealth in coastal and rural communities. Aquaculture can co-exist with healthy communities, thriving fisheries, and a clean environment. This strategy aims to ensure that it does. This plan is for and about Nova Scotians.
Aquaculture at Home and Abroad

In Nova Scotia

Nova Scotia’s aquaculture industry is one of the most diverse in the country. Many people, naturally picture marine-based mussel and salmon farms, but our industry expands beyond this. We are home to marine and land-based farms growing a variety of species, both fresh- and saltwater, and we sell a wide range of seafood products to markets locally and abroad. Every county in the province has a link to the aquaculture industry. Our province boasts the largest land-based marine plant production facility in the world, several state-of-the-art closed-containment recirculation operations, and twenty land-based fish facilities. It is this diversity that will help provide a solid foundation for developing a sustainable aquaculture industry in the future.

This map shows all the shellfish and finfish sites in the province, although many are inactive. Nova Scotia has a legacy of many small enterprises jumping into the industry without the financial backing needed to sustain the development costs, price fluctuations, and marketing demands.
Today, the industry is going through an evolution towards a scale of enterprise that can succeed in a very globalized and ultra-competitive sector.

Nova Scotia’s aquaculture industry generates about $45 million in revenues annually. Salmon is the most valuable product, accounting for over 80 per cent of revenues produced in Atlantic Canada. Nova Scotian shellfish products, such as mussels and oysters, are increasingly sought after in high-value United States markets and in European Union countries such as the United Kingdom and Germany.

The Roadmap for Aquaculture Investment in Nova Scotia was a study that included consultations with federal and provincial departments, industry members, and scientists. The purpose was to develop criteria that would be used for selecting sites in Nova Scotia for aquaculture. The study concluded that Nova Scotia has a wide variability in climatic and oceanographic conditions around the coast. This finding presented an excellent opportunity to develop a diverse aquaculture sector with good potential for producers of many different commercial species.
The success of our aquaculture industry has created jobs throughout rural and coastal Nova Scotia. The value chain is significant and has supported industries that include environmental consulting, engineering, boat building, feed production, financial institutions—the list goes on. The jobs associated with the industry are a good rural fit. A skilled and educated workforce is needed, one that has the expertise to continue to expand the industry and the experience through prior learning to fill many positions.

Aquaculture can be part of a bright future for rural and small-town Nova Scotia.

In Canada

In Canada, aquaculture production began more than 50 years ago. Today, the industry provides approximately 6,000 direct full-time jobs and close to 10,000 more positions in related sectors.

The Canadian aquaculture industry is valued at over $2.1 billion, and Canada can play a more significant role globally. Achieving this goal will depend on sustainable aquaculture management, a dynamic regulatory system, and improved public engagement.

On a Global Scale

Population growth coupled with increased consumer affluence, the decline in wild fisheries and advances in technology have contributed to making aquaculture one of the fastest-growing food sectors in the world. This growth is projected to continue at a rate of four per cent per year through to 2030. Aquaculture now supplies 50 per cent of the world’s food fish; this is expected to reach 60 per cent by 2020.
Internationally, many cultures seek out fish as a preferred source of protein, particularly in the middle-class markets of Asia’s emerging economies. As the aquaculture sector around the world grows, it creates opportunities to attract international investment to our province, and to export aquaculture-related goods and services to international markets. International investment in export-focused resource sectors is a key driver of the rural economy. Aquaculture provides significant opportunities to attract foreign direct investment to coastal communities. As well as the direct job creation linked to these investments, the related supply-chain opportunities and impacts can be significant.

Federal-Provincial Support and Cooperation

In September 1999 the federal government and the governments of New Brunswick, Nova Scotia, Quebec, Prince Edward Island, Newfoundland & Labrador, and Nunavut signed the Agreement on Inter-jurisdictional Cooperation with Respect to Fisheries and Aquaculture. This agreement formalized the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) and several supporting committees, including a Deputy Ministers Committee, an Inter-jurisdictional Working Group of Senior Officials, and a Strategic Management Committee on Aquaculture. In addition to the CCFAM, there is an Atlantic equivalent known as the Atlantic Council of Fisheries and Aquaculture Ministers, with its own mandate to provide a forum to exchange information on and to facilitate coordination of approaches to Atlantic fisheries issues (including aquaculture).

For a decade, Canada and Nova Scotia have shared a Memorandum of Understanding on Aquaculture Development that highlights how the two levels work together toward the development of commercial aquaculture in Nova Scotia. Through an additional MOU, the four Atlantic Provinces work collaboratively for the development of a sustainable industry in the region. The agreement also provides for a unified voice when dealing with the federal government by working towards a harmonized regulatory and policy environment.

The National Aquaculture Strategic Action Plan Initiative was developed to help Canada reach its aquaculture potential in a sustainable way. The plan, endorsed by the CCFAM, outlines a strategic vision that relies on key areas for action: governance, social licence and reporting, and productivity and competitiveness.
A Strategy for Nova Scotia

Nova Scotia’s aquaculture strategy capitalizes on our competitive advantage in high-quality fresh- and saltwater resources, our aptitude and skill in the fishery, our markets around the world for fish products, and our world-class institutions.

The province can create economic wealth in rural and coastal Nova Scotia, while at the same time respecting the environment and sharing coastal resources with others. Ongoing efforts will build upon the steps already taken by government so that Nova Scotia can further benefit from the long-term opportunity that aquaculture represents.

Nova Scotia’s plan identifies and builds on four key strategic pillars:

- Farming Responsibly
- Aquaculture Engagement
- Regulatory Safeguards
- Jobs and the Economy

These were selected after consultation with the Aquaculture Association of Nova Scotia, discussions with the Mi’kmaq of Nova Scotia, and interaction over the years with industry participants and the general public.

Government believes that the most prudent and effective approach at this time is the development of a strategy that represents the best interests of all Nova Scotians. In addition, elements of other government strategies—jobsHere, Workforce, Better Business, Water Resource Management, Natural Resource, and the upcoming Coastal—are also woven into this Aquaculture Strategy. This government wishes to see its priorities aligned across departments with departments working in collaboration.
All forms of aquaculture can play a role, from marine-based finfish to shellfish farming. For communities to trust ventures that they may perceive to pose potential risks, we need to ensure that the most up-to-date regulatory framework is in place, and we need to enforce it.

This strategy is a dynamic document, and demonstrates government’s commitment to engage the public and to assure transparency and interaction between industry proponents and concerned community members. The goal is to create a sustainable aquaculture industry, resulting in year-round jobs and to grow the economy throughout Nova Scotia.
Farming Responsibly

The cornerstone of development and stability for Nova Scotia’s aquaculture industry is farming responsibly. This relies on extension services provided by the Department of Fisheries and Aquaculture, and comprehensive fish, shellfish, and aquatic plant health and environmental monitoring programs.

Extension Role

The aquaculture industry relies heavily on the guidance provided by Department of Fisheries and Aquaculture field staff. Services include food safety education, sediment and water quality monitoring, site selection, equipment selection for enhanced productivity, technical assistance, fish health diagnostics assistance, and surveillance.

The provincial government will now play a stronger role in oversight and regulatory affairs. The aim is to maintain and sustain the industry, while ensuring the health and welfare of farmed and wild stocks.

Government will

- Enhance extension services to the industry.
- Partner with industry to implement site-selection criteria.

Monitor and Audit

Quality environmental monitoring and reporting are important both to ensure good environmental stewardship and to build public acceptance of the industry.
The current Environmental Monitoring Program was developed in partnership with the Aquaculture Association of Nova Scotia, Bedford Institute of Oceanography, and Dalhousie University. Benchmarks were established for environmental standards of biological performance and processes by integrating science-based management tools.

As the industry grows, the Department of Fisheries and Aquaculture will not have the capacity to directly monitor all aquaculture sites. Instead, the operator will have to meet government’s regulatory framework and ensure that regular testing is completed. The government will play a more rigorous regulatory and enforcement role.

In other jurisdictions, poorly managed, overcrowded, or badly chosen site locations have had a negative impact on the industry. We know that appropriate adaptive management practices, such as improved feeding techniques, lower stocking densities, and site fallowing, can minimize environmental impact.

**Government will**

- Formalize an audit program that is able to withstand technical and enforcement challenges for finfish sites.
- Create a scientific, risk-based approach for sampling mussels and other shellfish sites.
- Develop more detailed policies outlining allowable levels of farm impact.
- Establish mitigation and remediation protocols required of companies.
- Enhance the existing environmental monitoring framework to require adaptive practices.
Fish, Shellfish, & Aquatic Plant Health

Nova Scotia’s aquatic animal health program began over twenty years ago. Substantial growth has occurred in the past ten years and the industry is poised to continue growing. This program is a critical component of its future growth.

The current fish health program combines regulating fish health through the aquaculture regulations and providing health services and industry oversight through on-farm veterinary services. This program has served the government and industry well. However, as we enter a new phase of increased development, there will be a need to shift responsibilities. The private sector must increase its role in providing primary care to the farming industry.

Comprehensive health programs include disease surveillance and reporting, diagnostic facilities and operations, biosecurity for the prevention and containment of disease, emergency response and disease control, regulatory program management and auditing, and capacity for control of emerging diseases.

Government will

• Develop the legal authority for the province to acquire samples, require reporting of fish losses related to disease or environmental factors, isolate or quarantine, halt the movement of fish and equipment, mandate disinfection or treatment, and order destruction of crops.

• Form research and development partnerships with federal agencies and private companies to support aquatic animal and plant health initiatives.

• Implement more comprehensive fish health policies.

• Provide additional professional staff to deliver on government’s regulatory role.
Aquaculture Engagement

Public concern about aquaculture operations in Nova Scotia—in bays, inlets, harbours, and land-based sites—remains one of the most challenging issues facing the industry. Future success for the industry depends on working with communities who have concerns around aquaculture development. It is the responsibility of industry, government, and other groups who seek to develop sites in Nova Scotia to respond to local concerns.

Improved Communication and Outreach

Citizens throughout Nova Scotia want to be involved and to have the opportunity for feedback on issues affecting their communities. This public expectation would be addressed through a wide range of communication and outreach activities designed to ensure the media, communities, and the public are well-informed about the industry.

Companies need to develop and maintain close relationships with local communities. We expect good corporate citizenship and cooperation with other resource users. The province will identify ways to facilitate this.

**Government will**

- Develop a comprehensive communications plan that would allow for a more transparent process of information-sharing.
- Develop formal outreach policies that encompass all aspects of the industry.
- Create a process that will allow multi-stakeholder engagement.
- Brand local aquacultural products to support Nova Scotia's Buy Local campaign.
Aboriginal Interests

The Mi’kmaq of Nova Scotia have traditionally been stewards of the province’s natural resources such as the fishery. Their knowledge and expertise are being adapted to meet emerging demand for fish and shellfish, and some communities are developing high-value, niche aquaculture products. It is important that Aboriginal entrepreneurial activity in aquaculture continues.

*Government will*

- Engage with the Mi’kmaq through the “Made in Nova Scotia” process.
- Collaborate with Mi’kmaq on further involvement with industry development.

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**Farming Responsibly**
- Extension Role
- Monitor and Audit
- Fish, Shellfish, & Aquatic Plant Health

**Aquaculture Engagement**
- Improved Communication and Outreach
- Aboriginal Interests

**Regulatory Safeguards**
- Provincial, Regulation, and Policy
- Licensing and Leasing
- Intergovernmental Cooperation

**Jobs and the Economy**
- Building Skills for a Strong Industry
- Supporting Productivity and Innovation
- Becoming Globally Competitive
Rural and coastal resources provide good jobs, opportunities for sustainable growth, and a high quality of life. Government should work to improve the way that aquaculture is managed and regulated; it is currently complex and confusing, involving many government agencies with overlapping mandates.

**Provincial Legislation, Regulation, and Policy**

The industry has outgrown the existing legislation and regulations. As the industry in Nova Scotia grows, there is a need for updated policies and improved regulatory safeguards. Other jurisdictions have undergone significant restructuring to incorporate policies related to management of bays, including single-year class crops, fallowing of entire bays, minimum distance between sites, and protocols on disposal of processing-blood water. Nova Scotia has not developed at the rate of other jurisdictions. We have adopted best management practices based on the policies of others. At this stage, they must be formalized for our province.

**Government will**

- Undertake a provincial legislation, regulation, and policy review.
- Adopt formal policies based on best practices in the industry.
- Utilize objective, science-based information in regulatory and business decision-making.

**Licencing and Leasing**

The Department of Fisheries and Aquaculture issues licences and leases for the commercial culture of finfish, shellfish, and aquatic...
plants in the province. All aquaculture sites require a license to operate; those located in the ocean also require a provincial lease for the use of that space. Staff network with other federal/provincial agencies to ensure that potential impacts to fish habitat and existing fisheries have been considered.

Biologists and veterinarians undertake a technical review of all applications. A GIS and Licensing Officer creates the necessary digital maps, and works with the applicant to ensure that the appropriate sketches have been prepared. These sketches describe the gear/infrastructure that the applicant proposes to place in the ocean.

Both the province and Fisheries and Oceans Canada require baseline information about the site, in the form of underwater video and current-meter and sediment analyses.

Any project that proposes to install gear or infrastructure of any kind in the water column, such as finfish cages, suspended mussel lines, or floating oyster bags, requires authorization from the Navigable Waters Protection Program of Transport Canada.

A Canadian Environmental Assessment Act Review is conducted in most cases on behalf of the Navigational Waters Protection Program, by the Environmental Affairs branch of Transport Canada.

Government’s role in the review of aquaculture applications can take up to thirty-six months. During this time the Department of Fisheries and Aquaculture conducts a technical review, hosts a public meeting in the community, and keeps the proponent informed of where their application is in the system.

Licences and leases are granted for the same number of years: initially for ten years then renewed for five-year periods thereafter. Aquaculturalists say the lease period affects the perceived stability of their businesses. Other jurisdictions issue licences based on production cycle, but have longer leases.
Reassignment is the process of transferring an existing licence to another group or company. The new licence holder is subject to all terms and conditions already identified for the site. The reassignment of a license does not require public engagement. However, this has caused confusion amongst community groups and citizens and, as a result, created misunderstandings about processes and the level of expansion in the industry.

Better Business is our government’s approach for improving how government and business work together. The renewed approach ties into jobsHere, by contributing to the business environment where Nova Scotian businesses are set up for success. When opportunities are identified where other levels of government have a great impact, our government will work with them to improve the business environment.

**Government will**

- Work with other agencies and governments to streamline the application process, while maintaining rigour.
- Increase the lease tenure period for aquaculture businesses.
- Review the licence period.
- Report the reassignment of licences to applicable communities in a transparent and timely manner.

**Intergovernmental Cooperation**

The provincial government has developed effective working relationships with federal aquaculture regulators. The Department of Fisheries and Aquaculture networks with the following agencies:

Fisheries and Oceans Canada, Transport Canada, Environment Canada, Canadian Food Inspection Agency

**Government will**

- Continue to participate in the development of national policies and guidelines affecting provincial aquaculture.
Jobs and the Economy

This strategy is an agreed-upon action under jobsHere, Nova Scotia’s plan to create jobs and grow the economy. The jobsHere plan focuses on three priority areas:

- Learning the right skills for good jobs
- Growing the economy through innovation
- Helping businesses become more competitive globally

Nova Scotia’s aquaculture strategy will contribute to the achievement of these goals and objectives. In particular, the sector can play a key role in developing good jobs and globally competitive companies in rural and coastal communities.

The Atlantic Provinces Economic Council (APEC) Report Card released in February 2012 highlighted significant opportunities for the industry in Atlantic Canada. With a focus on expanding markets, minimizing environmental impact, and enhancing infrastructure and productivity, companies can improve their competitiveness. A fully integrated sector needs to evolve within our region. By branding our product as growers and processors working with industries along the value chain and with research institutions, our global competitive advantage will be achieved.

Investment in aquaculture can provide meaningful economic activity that will sustain communities and maintain their quality of life. Aquaculture development activities have traditionally focused on building the regulatory framework and infrastructure for sustainable fish farming. This strategy will also focus on supporting the value-added processing and product innovation necessary to create additional onshore jobs and supply chain activities.
The processing of aquaculture products in Nova Scotia can significantly add to the long-term stability of rural and coastal communities. The addition of a small number of marine sites coupled with existing approved sites being utilized to their full potential can have a positive impact on rural Nova Scotia.

Building Skills for a Strong Industry

Under jobsHere, the province is implementing a new workforce strategy to help workers build new skills, learn new technologies, maximize their career opportunities and earning potential, and better understand their employment options. Creating a skilled workforce for good jobs in our rural and coastal communities is central to the success of that strategy.

An export-focused resource sector such as aquaculture can play an important role in helping young people and families to remain and thrive in rural and coastal Nova Scotia. An innovative aquaculture sector can create jobs both on the water, in finfish farms and shellfish operations, and onshore, in value-added processing and supply-chain activities or land-based aquaculture operations.

Government will

- Work with provincial and federal partners to develop improved access to aquaculture-related skills training in rural and coastal communities, including recognition of prior learning.
- Encourage the aquaculture sector to develop effective recruitment strategies to promote opportunities in graduate and entry-level positions.
- Encourage companies to access provincial programs that support workforce development, and to improve management capacity to grow internationally competitive businesses.
- Identify approaches to strengthen rural and Aboriginal entrepreneurs to develop and grow aquaculture-related businesses.
Supporting Productivity and Innovation

Growing a sustainable aquaculture industry will require companies to invest in productivity and innovation to maximize value-added opportunities. The recent APEC Report Card on aquaculture concluded that firms in Atlantic Canada “will need to improve competitiveness through research, investment in infrastructure, and productivity improvements.”

A recent analysis of Nova Scotia’s ocean technologies sector revealed that a highly innovative cluster of companies is developing technologies related to the marine economy. Despite this, relatively few of these technologies are applied to increase innovation and productivity in the aquaculture industry.

If the industry is to achieve sustainable expansion, achieving productivity gains through the application of innovative technologies will be crucial. Clean technologies that reduce the carbon footprint and environmental performance of aquaculture will contribute to a more sustainable industry, which in turn will increase the value of aquaculture products.

Government will

• Foster innovation partnerships between aquaculture firms and other companies and universities in Nova Scotia’s ocean technologies cluster that address specific productivity, sustainability, and environmental issues in the sector.

• Promote, across the sector, the adoption of proven technologies that increase productivity, reduce business costs, and minimize the impact of aquaculture on the marine environment.

• Facilitate opportunities for companies to join global innovation networks and take advantage of opportunities for technology adoption, R&D partnerships, and commercialization.
Becoming Globally Competitive

Continued participation in international markets and increased focus on product and market diversification will make Nova Scotia’s aquaculture sector stronger, more successful, and more resilient. Because Nova Scotia’s small market offers limited local opportunities, sales in international markets are crucial to ensuring growth in profits and employment at home. International partnerships such as joint ventures can lower input costs and bring capital investment in new ideas and technologies. In these ways, investment and trade activities directly increase sales, profits, and employment back home.

Government departments and business development agencies are committed to supporting companies to identify new markets across Canada and internationally. Existing programs such as ExportAbility, Go Ahead (GAP), and others support companies to undertake international commerce activities and to develop new markets. In addition, smaller aquaculture companies will be encouraged to collaborate on international marketing in order to reduce costs and increase impact.

Increasingly, seafood consumers are better informed about product quality and sustainability. A high-quality product produced in environmentally sustainable conditions can demand a premium in many international markets. Certification and high-quality standards will play a more important role in accessing higher-value international markets.

Smaller producers in the aquaculture industry have experienced difficulties in accessing working capital and financing for expansion and international trade activities. Ongoing credit restrictions imposed on industry threaten to impede sectoral growth. The Nova Scotia Fisheries and Aquaculture Loan Board is mandated to support aquaculture companies and will assess how to better deliver relevant financial product services to support growth and international activity.
Government will

- Promote awareness of the benefits of engaging in international commerce activities, and help companies build the skills and capacities they need to “go global.”

- Encourage international commerce opportunities in the aquaculture sector through seminars, trade missions, market intelligence, and market development activities.

- Work to improve company access to trade finance guarantees and working-capital loans.

- Enable companies to achieve sustainability and organic certifications that will add value to their products and improve access to international markets in the US and Europe.

- Help the industry to identify new market opportunities and develop specialized products in response to international demand.

Summary

Nova Scotia’s Aquaculture Strategy, “Creating Sustainable Wealth in Rural and Coastal Nova Scotia,” will guide the government’s efforts in the coming years—the key strategic areas are discussed in this report.

The province will work with industry and other levels of government to achieve significant increases in the farm-gate value of Nova Scotia’s aquaculture industry.

Government looks forward to working cooperatively with all stakeholders to expand a sustainable aquaculture industry that will contribute to Nova Scotia’s economy and create wealth in rural and coastal communities.
Resources

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<td>Implement site selection criteria</td>
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<td>Outline acceptable levels of farm impact</td>
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<td>Brand local aquacultural products</td>
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<td>Streamline application process</td>
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<td>Continue to participate in national working groups</td>
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<td><strong>Jobs and the Economy</strong></td>
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<td>Work to improve access to skills training</td>
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<td>Encourage companies to access provincial programs</td>
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<tr>
<td>Identify ways to strengthen entrepreneurial businesses</td>
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<tr>
<td>Encourage innovation partnerships</td>
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<tr>
<td>Promote adoption of proven technologies</td>
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<tr>
<td>Help companies join global innovation networks</td>
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<tr>
<td>Highlight benefit of going global</td>
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<tr>
<td>Promote international commerce activities</td>
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<tr>
<td>Improve access to trade finance guarantees and working capital loans</td>
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<tr>
<td>Work with companies to attain certifications</td>
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<tr>
<td>Help identify new market opportunities</td>
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